WHAT IS CLAIMED IS:

1. A thin-film magnetic head having an opposing face that opposes a recording medium, the thin-film magnetic head comprising:

a lower core layer extending from the opposing face in a height direction;

a magnetic layer directly or indirectly connected to the lower core layer at a position a predetermined distance away from the opposing face in the height direction; and

a coil toroidally wound around the magnetic layer, the coil comprising:

a plurality of first coil segments that cross over the magnetic layer, the first coil segments being separated from each other with predetermined gaps therebetween in the height direction;

a coil insulating layer covering the first coil segments, the magnetic layer being formed on the coil insulating layer;

a plurality of second coil segments that cross over the magnetic layer, the second coil segments being formed on the coil insulating layer; and

a plurality of bank layers disposed at two sides of the magnetic layer in the track width direction, the bank layers being electrically connected with ends of the first coil segments,

wherein ends of each second coil segment in the track width direction are electrically connected with upper faces

of the bank layers to connect ends of the adjacent first coil layers with each other via the second coil segments, thereby forming a toroidal coil.

2. The thin-film magnetic head according to claim 1, further comprising a lower magnetic pole layer formed above the lower core layer and a gap layer comprising a nonmagnetic metal material formed on the lower magnetic pole layer, the lower magnetic pole layer and the gap layer being formed by plating,

wherein the magnetic layer is formed on the gap layer and functions as an upper magnetic pole layer;

the lower magnetic pole layer, the gap layer, and the magnetic layer constitute a first composite structure;

the width of the first composite structure in the track width direction at the opposing face defines a track width Tw; and

each banking layer comprises a second composite structure comprising a first sublayer comprising the same material as the lower magnetic pole layer, a second sublayer comprising the same material as the gap layer, and a third sublayer comprising the same material as the magnetic layer.

3. The thin-film magnetic head according to claim 2, the first composite structure further comprising an upper core layer on the magnetic layer, the upper core layer having a lower saturation magnetic flux density than that of the magnetic layer and being formed by plating, and

the second composite structure further comprising a fourth sublayer on the third sublayer, the fourth sublayer comprising the same material as the upper core layer.

4. The thin-film magnetic head according to claim 1, further comprising:

a lower magnetic pole layer on the lower core layer;

a gap layer comprising a nonmagnetic metal material and disposed on the lower magnetic pole layer; and

an upper magnetic pole layer disposed on the gap layer, wherein the lower magnetic pole layer, the gap layer, and the upper magnetic pole layer are formed by plating and constitute a magnetic pole end layer,

wherein a width of the magnetic pole end layer in the track width direction at the opposing face defines a track width Tw, and

the magnetic layer is formed on the magnetic pole end layer.

5. The thin-film magnetic head according to claim 4, wherein the saturation magnetic flux density of the magnetic layer is lower than that of the upper magnetic pole layer.

6. The thin-film magnetic head according to claim 4, wherein each bank layer comprises the same material as the magnetic layer.

7. The thin-film magnetic head according to claim 2,

wherein the bank layer comprises a first sublayer comprising the same material as the magnetic layer and an adjustment sublayer stacked on the first sublayer with at least one step difference therebetween, wherein the upper face of the adjustment sublayer is located at a position higher than the upper face of the upper core layer.

8. The thin-film magnetic head according to claim 2, wherein the gap layer and the second sublayer comprise at least one of NiP, NiReP, NiPd, NiW, NiMo, NiRh, Au, Pt, Rh, Pd, Ru, and Cr and are formed by plating.

9. The thin-film magnetic head according to claim 1, wherein the bank layer comprises a composite structure comprising at least one layer comprising Cu, FeNi, Ni, Au, FeCo, FeCoRh, or FeCoNi and at least one protective layer comprising Ni, CuNi ,or NiP.

10. The thin-film magnetic head according to claim 9, wherein the bank layer further comprises an adjustment sublayer stacked on the composite structure with at least one step difference therebetween, wherein the upper face of the adjustment sublayer is located at a position higher than the upper face of the magnetic layer.

11. The thin-film magnetic head according to claim 1, wherein the bank layer has a uniform cross sectional area over the entire length, comprises an insulating material, and

has a single-layer or multilayer structure, wherein the upper face of the bank layer is located at a position higher than that of the upper face of the magnetic layer.

12. The thin-film magnetic head according to claim 1, wherein the distance between an end of the first coil segment and an adjacent end of the adjacent first coil segment is larger than the minimum distance between the adjacent first coil segments in a region where the first coil segments overlap the magnetic layer, and this relationship is satisfied in at least one set of adjacent first coil segments.

13. The thin-film magnetic head according to claim 12, wherein the first coil segments have portions parallel to each other in the region where the first coil segments overlap the magnetic layer.

14. The thin-film magnetic head according to claim 1, wherein the distance between an end of the second coil segment and an adjacent end of the adjacent second coil segment is larger than the minimum distance between the adjacent second coil segments in a region where the second coil segments overlap the magnetic layer, and this relationship is satisfied in at least one set of adjacent second coil segments.

15. The thin-film magnetic head according to claim 14, wherein the second coil segments have portions parallel to

each other in the region where the second coil segments overlap the magnetic layer.

16. The thin-film magnetic head according to claim 1, wherein the length of the second coil segment in a first direction orthogonal to the direction of electric current is larger than the length of the first coil segment in the first direction.

17. The thin-film magnetic head according to claim 1, wherein the thickness of the second coil segment is larger than the thickness of the first coil segment.